

PRACTICE FINAL EXAM

Beginning and Intermediate Algebra by Messersmith and Feldman, 4th edition

1. Factor by grouping: $2x^3 - 18xy + 3x^2y - 27y^2$

For numbers 2 – 6, factor completely.

2. $2a^2 + 20a + 18$

3. $y^5 + 3y^4 - 10y^3$

4. $6h^2 + 19h + 15$

5. $7x^2 - 44xy - 35y^2$

6. $50 - 32t^2$

7. Solve: $p^2 - 2p = 35$

8. Determine the domain of the rational function.

$$f(c) = \frac{c+4}{c+5}$$

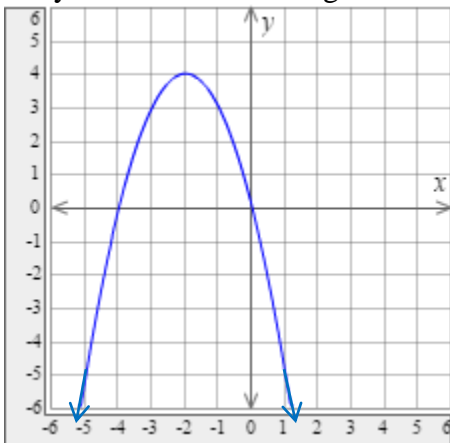
9. Find the product and simplify if possible: $\frac{h^2 - 11h + 28}{h - 10} \cdot \frac{h^2 - 15h + 50}{6h - 24}$

10. Perform the indicated operation: $\frac{15}{m+8} + \frac{2}{m}$

11. Solve the equation: $\frac{7}{x-1} + \frac{x}{x+9} = \frac{8x+126}{x^2+8x-9}$

12. A nurse sets an intravenous fluid drip rate at 1000 ml every 8 hours. How much fluid would the patient receive in 5 hours?

13. Identify the domain and range of the relation and determine whether the relation is a function.

14. Let $f(x) = x^2 - 2x - 4$. Find the following function values.

a. $f(-2)$ b. $f(0)$ c. $f(5)$

15. Solve the system of equations by using the graphing method:

$$\begin{cases} y = -2x - 3 \\ y = x + 3 \end{cases}$$

16. Solve the system of equations by using the substitution method:

$$\begin{cases} x - 2y = 7 \\ 2x + 3y = -21 \end{cases}$$

17. The number of hours it takes to paint a house is inversely proportional to the number of people painting. If it takes 5 workers 10.8 hours to paint a certain house, how long would it take 7 workers? Round to one tenth of an hour.

18. Solve the absolute value equation: $|b + 11| - 5 = -1$

19. Solve the inequality. Graph the solution set, and write the answer in interval notation.

$$|3h + 6| + 1 \leq 10$$

20. Graph the inequality: $3x - 6y > 5$

21. Simplify the radical expression. Assume all variable represent positive real numbers: $\sqrt[3]{250x^{16}y^7}$

22. Perform the indicated operation: $\sqrt{6} - 6\sqrt{150} + 3\sqrt{294}$

23. Rationalize the denominator of the expression: $\sqrt{\frac{81x^5}{5y}}$

24. Solve the radical equation: $x - 4 = \sqrt{2x - 5}$

25. Simplify: $\sqrt{-40}$

26. Perform the indicated operation: $(-9 + 5i)(-10 - 3i)$

27. Solve using the quadratic formula: $2x^2 + 3x - 1 = 0$

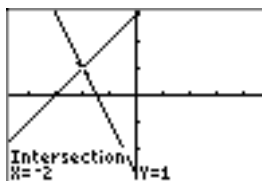
28. Solve using the quadratic formula: $x^2 + 4 = 2x$

29. Graph the function using the vertex formula. Include the intercepts. Determine the domain and range.
 $f(x) = -x^2 - 6x - 5$

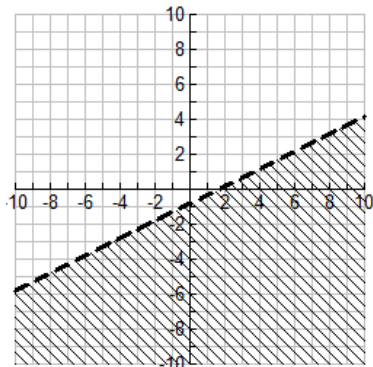
30. Graph the function using the vertex formula. Include the intercepts. Determine the domain and range.
 $f(x) = x^2 + 4x - 5$

Practice Final Exam Answers

1. $(x^2 - 9y)(2x + 3y)$
2. $2(a+1)(a+9)$
3. $y^3(y+5)(y-2)$
4. $(2h+3)(3h+5)$
5. $(7x+5y)(x-7y)$
6. $2(5-4t)(5+4t)$
7. $\{-5, 7\}$
8. $(-\infty, -5) \cup (-5, \infty)$
9. $\frac{(h-7)(h-5)}{6}$
10. $\frac{17m+16}{m(m+8)}$
11. $\{-7, 9\}$
12. 625 mL
13. Domain: $(-\infty, \infty)$ Range: $(-\infty, 4]$ The relation is a function.
14. a. 4 b. -4 c. 11



15. $(-2, 1)$ Consistent and independent.
16. $(-3, -5)$
17. 7.7 hours
18. $b = \{-15, -7\}$
19. $[-5, 1]$



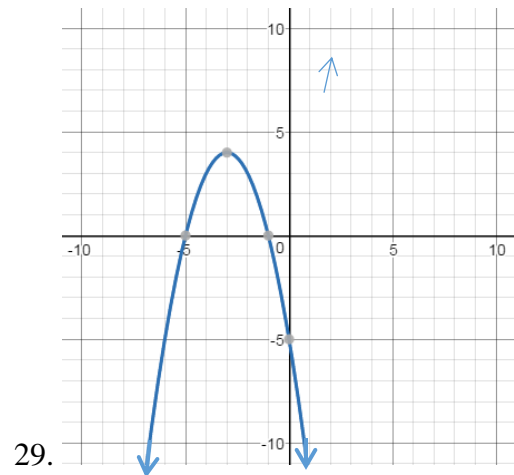
- 20.
21. $5x^5y^2\sqrt[3]{2xy}$
22. $-8\sqrt{6}$
23. $\frac{9x^2\sqrt{5xy}}{5y}$
24. $x = 7$

25. $2i\sqrt{10}$

26. $105 - 23i$

27. $\left(\frac{-3 - \sqrt{17}}{4}, \frac{-3 + \sqrt{17}}{4}\right)$

28. $\{1 - i\sqrt{3}, 1 - i\sqrt{3}\}$



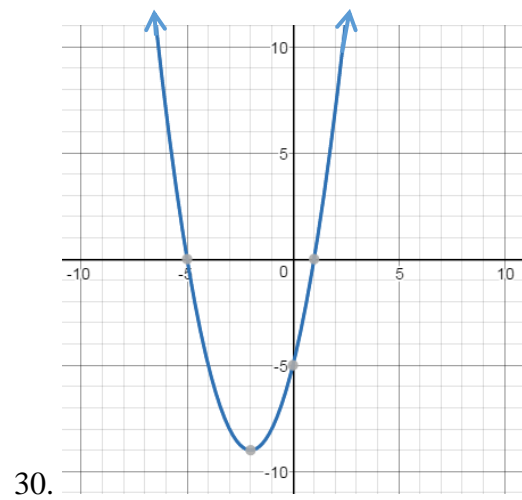
Vertex: $(-3, 4)$

x-intercepts: $(-5, 0), (-1, 0)$

y-intercept: $(0, -5)$

Domain: $(-\infty, \infty)$

Range: $(-\infty, 4]$



Vertex: $(-2, -9)$

x-intercepts: $(-5, 0), (1, 0)$

y-intercept: $(0, -5)$

Domain: $(-\infty, \infty)$

Range: $[-9, \infty)$